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The Effect of Firm's Market Share Performance on Inclusion in NSE 20 Share Index: A Case Study of Mumias Sugar Company Ltd

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Abstract
The aim of the study was to evaluate the effect of firm's share performance on inclusion in NSE 20 share index. The study adopted an event study research design. Purposive sampling method was used to select Mumias Sugar Company Ltd for analysis from the target population of NSE 20 share index constituent companies. The study found out that stocks in the NSE markets do not exhibit significant positive abnormal returns but exhibit significance change in trading volume following inclusion into index.

1.1 INTRODUCTION

The Stock Market is one of the most closely observed economic phenomenon's in the world. Market indicators meet the demand for measures of stock market performance. Such indicators quantify movements in stock market prices and act as a standard in evaluating the returns on money invested in the stock market. Stock market indices as aggregate measure are an instruments or platform to meet the information requirement of investors by characterizing the development of global markets and specified market segments or sectors (Amenc and Goltz, 2006). According to Downes and Goodman (2003), a stock index is a measure of performance of a group of stocks which may be seen as a representative of a stock market. This can be either the whole market or even a segment of the market. Redhead (2003) notes that indexes vary in type from regional, industry specific, national and even global. Indexes are also calculated for various instruments such as bonds, futures, and even real estate investments, thus they can be modified to meet certain information needs. With the advent and growth of indices, there have been various products such as index funds, options and futures which with direct links to indexes and do represent large industries in the market and themselves

According to Philips and Kaplan (2005), the earliest indices were designed 'to gauge the market's general direction'. One of the first indices was the Dow Jones Industrial Average (DJIA) Index which initially tracked 19 industry stocks. It was designed in the late 19th century by Charles Dow. It used a simple arithmetic construction which is the basis for many indexes including the Nairobi Securities Exchange (NSE) 20 share Index. As technology improved, market gauges have moved from very basic indexes to broader market measures, such as S&P 500, and higher quality measures of the full market e.g. Wilshire 5000, NSE All share Index among others. Downes and Goodman (2003) observes that the inherent inability of the older index to satisfy investors has led to construction of new indices. Old indexes were good for just tracking the market and thus could not meet various demands from investors who had different investment styles and objectives such as superior portfolio return. New indexes varied from 'one-factor and two-factors models to more complex six-to-nine factors model such as Salomon Smith Barney index and Dow Jones Industries index (Neuberg, 2014).

Stock indexes as a standard market gauge do affects stock performance. The argument that a stock's inclusion in an index results in a share price increase was observed quite a long time ago in developed stock market index. However, this according to the postulates of Efficient Market Hypothesis (EMH) could be regarded as market anomaly. Fama at el (1969) observed that asset prices should incorporate all information required for their accurate pricing and therefore changes in the composition of stock market indexes should not have any significant effects on the prices and trading volumes of the affected stocks. This study shades light on this issue with regards to index reconstructions in frontier markets.

1.2 Statement of the Problem

The existence of positive returns for benchmark index inclusion has dominated empirical literature. Studies such as Sadeghi (2011), Bankovica and Praņevics (2007), Hacibedel and Bommel (2006), Madhavan (2002), Lynch and Mendenhall (1997), Chen at el (2004) have found permanent price effect while other studies; Shankar and Randhawa (2006), Kaul at el (2000) have found temporal price effect. This has resulted to disagreement on the possible abnormal returns, for stocks included in index. In Kenya, several proxies (e.g. earnings and dividends,

IPOs and right issues, political and other economic events) have been used to assess stock market reaction to the arrival of news. However, the effect of index reviews, as an event, has not been assessed on stock market share performance. This research therefore, set out to establish whether index reviews has effects and what effects, if any, it has on firm's market share performance of NSE 20 share index constituent companies.

1.3 Purpose of the Study

The general objective of the study was to evaluate the effect of firm's share performance on inclusion in NSE 20 share index.

1.4 Specific Objectives of the Study

i. To determine the effects of firm's market share price on inclusion in NSE 20 share index.
ii. To establish the effect of firm's market share trade volume on inclusion in NSE 20 share index.

1.5 Research Hypothesis

Ho_1 There is no statistical significant effects on firm's market share price on inclusion in NSE 20 share index.

Ho_2 There is no statistical significant effect on firm's market share trade volume on inclusion in NSE 20 share index.

2.0 Literature Review

2.2 NSE 20 Share Index, Constituents Companies and Index Review

The NSE 20 Share index is a market-capitalization weighted index for the Nairobi Securities Exchange. It was established in 1966 by Nairobi Securities Exchange Ltd (then Nairobi Stock Exchange) to reflect daily prices of the 20 blue-chips (superior profitability and dividend record) companies (NSE, 2010). These companies are drawn from the three sectors of market namely the Main Investments Market Segment (MIMS), Alternative Investments Market Segment (AIMS) and Fixed Income Securities Market Segment (FISMS) and account for 70% of the capitalization of the Nairobi Securities Exchange. According to NSE (2013), market capitalization is the underlying criteria for inclusion in the index if companies fulfil all other inclusion requirements.

Periodic review of constituents companies of the NSE 20 share index is done on a quarterly basis by the index management sub-committee. The reviews is based on data collected for a period of one year as at the end of each quarter, and details of the outcome of the review are published after recommendations of the Index Management Sub-Committee have been endorsed by the Trading Committee and ratified by the Board. However, the change for the constituent companies are initiated and implemented as soon and when need arises (NSE, 2012). Furthermore, in the event of new issue and if the new issue is so large that the effectiveness of the index as a market indicator would be significantly and adversely affected by its omission, the sub-committee may recommend to the trading and compliance committee for its inclusion before the lapse of the one year clause.

2.3 Inclusion of Mumias Sugar Company Ltd in the 20 Share Index

Mumias Sugar Company was incorporated on 29th June 1971 with the Kenyan government being the major shareholder (70.76%) (Mumias Sugar, 2013). In 2001, the company was converted from a private to a public company and it was listed on the Nairobi Stock Exchange (NSE) under Industrial and Allied sector of Main Market Segment and on 1 August 2007 the company become a constituent company of NSE 20 Share Index (NSE, 2007). The announcement of inclusion was made on 20 July 2007 during a major NSE 20 Share Index Review that dropped six companies from its 20 share index constituent stocks and included new ones to reflect changes in market fundamentals. Since then, Mumias Sugar has remained as a constituent company in the NSE 20 Share Index.

2.4 Theoretical Review

2.4.1 Downward Sloping Demand Curve (DSDC) Hypothesis and Price Pressure Hypothesis (PPH)

This theory holds that inclusion of a share into an index is an 'information-free' event as addition (or deletion) of stock from index does not reflect an opinion on the firm's earnings prospects (Launois, 2009). In addition, this theory assumes that stocks have perfect or near perfect substitutes while investors do have preferences for local stocks to regional and international companies. Bankovica and Pranevics (2007) note that the absence of perfect substitutes for shares results in downward sloping demand curves as investors are price sensitive and demand a premium to substitute their holdings for less 'desirable' stocks. However, Hacibedel and Bommel (2006) notes that the abnormal return may be caused by changes in the aggregate demand which may results to a permanent or temporal price effect. The temporary price pressure hypothesis posits that inclusion of a share leads to increased demand for that share by funds managers tracking the index. Conversely when a share is deleted from the index,

demand falls leading to a fall in the price. In efficient markets, other buyers/sellers will step in to absorb the excess demand/supply and, in the absence of any other information, the price effects should be temporary (Shankar and Randhawa, 2006).

2.4.2 Certification or Information Hypothesis:

According to Hacibedel and Bommel (2006) certification or information hypothesis theory holds that index changes occur as a result of information content. This implies that changes in the index transmit new information about the firms to the market thereby leading to changes in stock prices. Bankovica and Pranevics (2007) emphasize that the Certification hypothesis asserts that index inclusions indicate positive information about the stocks, thus deletion or inclusion by a major benchmark index signals to the market that it has some private information about the specific stock. Certification also leads to as increase in the expected future cash flows, thus affecting the stock pricing. Chen at el (2004) notes that the revaluation of the stock price stems either due to change in the required rate of return or due to the expected cash flows.

2.4.3 Investor Recognition Hypothesis (IRH),

According to Shapiro (2002), investor recognition hypothesis (IRH) is founded on the notion that index inclusions are associated with decrease in shadow cost and increase investor awareness. This means that more investors become aware of a stock when it is added to the index and they hold it for its diversification benefits. As a result, the shadow cost falls and there is a permanent increase in the stock price. This hypothesis does not necessitate the price effects to be symmetric, since the index deletions would not essentially mean that investors would become unaware of the stock (Hacibedel and Bommel, 2006).

2.4 Empirical Literature Review

Sadeghi (2011) investigated the impacts of index additions on the return and liquidity of Shariah-compliant shares in Egypt and Jordan. He used a sample of companies that were added to the Dow Jones Islamic Market Index over the period ranging from January 2008 to December 2009. According to the findings of his study, stock prices respond positively to index addition. Moreover, the study results indicated that there was a long-term increase in returns and liquidity of shares added to the index. Similarly, Bankovica and Praņevics (2007) did a study to determine the effect of a stock's inclusion in an index on its price. The employed an event study methodology collect daily trading data from 2000 to 2006 in stocks that were added in the Baltic Stock Exchanges. The results of the study indicated that stocks added to an index experience significant abnormal returns during the announcement day.

Lin and Kensinger (2008) did a study to determine the impact of inclusion in the S & P 500 index on stocks trading volume and return volatility. Data for the study was collected from 1976 to 2005. The results of the study indicated that there is a significant increase in both return volatility and trading volume of a stock as a result of its inclusion in the S & P 500 index. Nonetheless, the study results showed that there was no statistical significant effect on abnormal returns as a result of stock inclusion in the index. Furthermore, Bildik and Gulay (2001) investigated the effects of changes in index composition on stock market in Istanbul Stock Exchange. The study adopted both event-study and cross-sectional research methodology. The data for the study was collected from 1995 to 2000 and it involved 204 companies that were added into the index and 24 companies that were deleted from the index. According to the results of their study, stocks included in the index generate positive returns and are characterized by high trading volume.

Hacibedel and Bommel (2006) conducted a study to determine whether stocks in emerging markets benefit from index inclusions. The sample of the study consisted a total of 269 stocks from 24 countries that had been added to the index and 262 stocks that had been deleted from the index. The results of their study indicated that there is a positive and a permanent impact in prices of shares included in the index. Additionally, the study results indicated that stocks included in the index experienced increased returns prior and post inclusion. Furthermore, Duque and madeira (2010) examined the stock reaction associated with changes in the index composition in Lisbon Stock exchange. The data for the study was collected for a period ranging from 1996 to 2001. According to the results of their study, stock prices react positively as a result of their addition to the index. Moreover, the study results indicated that stocks added into the index experienced positive and abnormal trading volume.

3.0 RESEARCH METHODOLOGY

3.1 Research Design and Target population

The study adopted an event study research design as advocated by Fama at el (1969) and MacKinlay and Craig (1997) to provide a better way of evaluating the magnitude of movement over time, of a specific event, on the value of a firm with the use of financial market data. The target population of the study comprised all the companies that constitute the NSE 20 Share Index.

3.2 Sampling procedure and Sample Size

Purposive sampling was used to select Mumias Sugar Company Ltd for analysis. The choice was based on its inclusion scenario as distinction from other index reviews, that is, long subsequent reviews time, wide gap between announcement date and inclusion date, and the number of companies affected..

3.3 Data collection

The study used secondary data which was obtained from NSE daily trading results. The data included; NSE 20 share index reviews announcement and inclusion dates, daily closing prices and trade volumes for NSE 20 share index of constituent companies and Mumias Sugar Company over the event window period of 21 days and post event period of 113 days.

3.4 Data analysis and Presentation

The study employed descriptive statistics to analyse data. In objective one, the standard ordinary Least Square (OLS) regression was used in order to calculate abnormal returns as follows:

$$\widehat{AR}_{it} = \left(\mathrm{R_{it}} - \hat{\alpha} - \hat{\beta}_{\mathrm{i}}\mathrm{R_{mt}}\right)$$

Where $\mathrm{R_i}$ represents normal returns expressed as $R_{it} = \hat{\alpha} + \hat{\beta}R_{mt} + \varepsilon_{it}$

β_i and $\hat{\beta}_{\mathrm{i}}\mathrm{R_{mt}}$ denotes OLS regression analysis parameters

In objective two, the turnover ratio was used so as to measure the pre and post inclusion trading volume. According to Amihud and Mendelson (2002), the turnover ratio (T_{ij}) can be calculated as follows;

$$\mathrm{T_{ij}} = \frac{\mathrm{Q_{it}}}{\mathrm{V_{it}}}$$

Where $V_{i,t}$ denotes the daily number of shares outstanding for stock i on day r

$Q_{i,t}$ is the number of shares of company i traded on day t (trading volume).

Pearson correlation analysis was conducted to establish the relationship between pre and post inclusion stock performance. Standardized z-test and t-test statistics were used to determine the significance of the relationship.

4.0 Results and Discussions

According to table 1, the market return was relatively stable with a mean of 0.000964, standard deviation of 0.0074, maximum and minimum returns of 0.0232 and -0.0206 respectively. The stock return vis-à-vis abnormal returns were relatively volatile. Stock return (R_{it}) had a mean of 0.000923, standard deviation of 0.0476, maximum and minimum returns of 0.3741 and -0.2649 respectively. Stock's abnormal returns (AR_{it}) had a mean of 0.000433, standard deviation of 0.0472, maximum and minimum returns of 0.1545 and -0.1133 respectively. This results indicates that, on average, Mumias Sugar Co. Ltd. relatively outperformed the market during the index review period (analysis period) with a total returns of 0.0014 (Normal Return of 0.000923 and Abnormal Return of 0.000433) compared to market return of 0.000964. This demonstrates that stocks added to index do exhibit returns above market average.

According to the results in table 2, there was an increase in abnormal returns means (0.00329 pre inclusion and 0.00433 post inclusion) and decrease in stock variances (0.0008 to 0.00052 for pre and post inclusion). The Pearson correlation value between the two means was -0.067. This indicates that there was a negative and a weak relationship between pre inclusion abnormal returns and post inclusion abnormal returns. The negative correlation means that pre inclusion abnormal returns decreased slightly whereas post inclusion abnormal returns increased marginally. The computed value in regard to the significance of mean differential, at 95% level of confidence was -0.1269 as compared to the t critical one-tail 1.727 and t critical two-tail ±2.086. The significance value was within the acceptance region (t<T) for both one tailed and two tailed tests. Therefore, this study fails to reject the null hypothesis and concludes that there is no statistical significance difference between pre inclusion abnormal returns and post inclusion abnormal returns in the short run following index review. These findings are also confirmed by z-test for two samples of means at 95% level of confidence. The computed Z-test value (-0.1287) was outside the rejection region (z critical one-tail 0.4488 and z critical two-tail ±0.8975).

From the results in table 3, there was an increase in turnover ratio mean (0.000823 pre inclusion rate and 0.001884 post inclusion rate) and increase in volume variance (2.2825 to 1.291 for pre and post inclusion respectively). The computed correlation value was 0.06213. This implies that there was a positive but a weak relationship between pre inclusion and post inclusion turnover ratio. The degree of significance of the relationship at 95% level of confidence was -7.776 as compared to z critical one-tail and z critical two-tail values of 1.645 and 1.96 respectively. This value was within the critical region (z>Z) hence this study rejects the null hypothesis and concludes that there is a statistical significance effect on firm's market share trade volume on inclusion in NSE 20 share index.

5.0 Summary and Conclusions

The aim of the study was to examine the effect of firm's share performance on inclusion in NSE 20 share index with reference to Mumias Sugar Company Limited. The results of the study indicated that there was an increase in abnormal returns after inclusion. However, both the t tests and z tests results indicated that there was no statistical significant difference between pre inclusion abnormal returns and post inclusion abnormal returns following index review. Furthermore, the results from the Pearson's correlation analysis indicated that there was a weak and a negative relationship between pre-inclusion abnormal returns and post-inclusion abnormal returns. In relation to the trading volume, the study results showed that there was an increase in the turnover ratio after the company shares were included in the index. In addition, significance tests revealed that there was a significant increase in Turnover ratio following the stock inclusion in the index. These findings support the findings by Shankar and Randhawa (2006), Bankovica and Praņevics (2007) and, Harris and Gurel (1986), all who found a significance rice in turnover ratio or liquidity for stocks added into index.

Based on the results, this study concludes that the reviews of blue chip indexes in frontier capital markets have effects on the affected shares or stocks. Specifically, inclusion of a stock into index will cause a rise in its market share price even though abnormal returns increase insignificantly. Furthermore, stocks added to an index do exhibit significance increase on turnover ratio. Therefore, index review has a general positive effect on firm's market share performance through rise in price and increased liquidity. Consequently, this study recommends that stocks to be added to blue chips indices are viable investment options as they exhibit an above average return. However, these returns are insignificance and thus cannot warranty speculative investment strategy, if transaction costs are captured. The simple buy-and-hold strategy is the best due to exhibited upward trends in cumulative stock returns.

6.0 Suggestion for further studies

Further studies should be conducted to determine the effects of firms market share performance on deletion from other market indices apart from blue chip index. Additionally, estimations of normal returns could be recalculated using economic models instead of the statistical models.

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Table 1: Descriptive Statistics on the Performance of Mumias Stock around the event period

Item	Mean (μ)	Maximum	Minimum	Std Dev (σ)
R_m	0.000964	0.0232	-0.0206	0.0074
R_i	0.000923	0.3741	-0.2649	0.0476
AR_i	0.000433	0.1545	-0.1133	0.0472

Table 2: Results for Abnormal Returns and Significance Tests

Descriptive Statistics		
	Pre Inclusion	Post Inclusion
Mean	0.003291012	0.004330098
Variance	0.00079922	0.00052153
Observations	21	21
Pearson Correlation	-0.067402675	
t-Test: Paired Two Sample for Means (95%)		
t stat	-0.126909311	
P(T<=t) one-tail	0.450139719	
t Critical one-tail	1.724718218	
P(T<=t) two-tail	0.900279438	
t Critical two-tail	2.085963441	
z-Test: Two Sample for Means (95%)		
z stat	-0.128724718	
P(Z<=z) one-tail	0.448787738	
z Critical one-tail	1.644853627	

Table 3: Results for turnover ratio and Significance test

Statistics	*Pre inclusion*	*Post inclusion*
Mean	0.000826044	0.0018845
Known Variance	2.28249	1.29089
Observations	82	82
Pearson Correlation	0.06213	
Hypothesized Mean Difference	0	
z stat	-7.776442653	
Z Critical one-tail	1.644853627	
Z Critical two-tail	1.959963985	

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